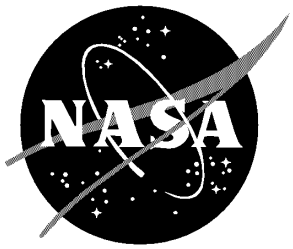

National Aeronautics and Space Administration

MAY 15, 19
NRA 97-OSS-

RESEARCH ANNOUNCEMENT

SUN-EARTH CONNECTION

Supporting Research and Technology, Suborbital, Data Restoration, and Guest Investigator Programs

Notice of Intent Due: **JUNE 16, 1997**
Proposals Due: **AUGUST 18, 1997**

OMB Approval No. 2700-0087

SUN-EARTH CONNECTION

SUPPORTING RESEARCH AND TECHNOLOGY, SUBORBITAL, DATA RESTORATION, AND GUEST INVESTIGATOR PROGRAMS

NASA Research Announcement
Soliciting Proposals for Basic Research
for period ending
August 18, 1997

NRA 97-OSS-08
Issued: May 15, 1997

Office of Space Science
National Aeronautics and Space Administration
Washington DC 20546-0001

NASA RESEARCH ANNOUNCEMENT 97-OSS-08

SUN-EARTH CONNECTION

SUPPORTING RESEARCH AND TECHNOLOGY, SUBORBITAL, DATA RESTROATION, AND GUEST INVESTIGATOR PROGRAMS

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SUN-EARTH CONNECTION

SUPPORTING RESEARCH AND TECHNOLOGY, SUBORBITAL, DATA RESTORATION, AND GUEST INVESTIGATOR PROGRAMS

This NASA Research Announcement (NRA) solicits proposals for basic research investigations that seek to understand natural phenomena in the disciplines relevant to the Sun-Earth Connection theme of NASA's Office of Space Science (OSS). The science disciplines of interest are heliospheric/cosmic particle physics, solar physics, magnetospheric physics, and ionospheric-thermospheric-mesospheric (ITM) physics. The purpose of this research opportunity is to enable the relevant science communities to plan, propose for, and fully exploit NASA flight missions in space science through a wide variety of research investigations involving theory and modeling, analysis of archival data, development of concepts for future experiments, development and flight of suborbital experiments, and key ground-based observations that support flight missions. This program supports only those proposals that clearly demonstrate relevance to NASA's interests. Specific opportunities open to proposals through this NRA are for Sun-Earth Connection Supporting Research and Technology (SR&T), Suborbital, Data Restoration, and Guest Investigator programs, each of which is treated in detail in Appendix A.

Participation in these programs is open to all categories of organizations including educational institutions, industry, nonprofit institutions, NASA Centers, and other Government agencies. Investigators from Small Disadvantaged Businesses, Historically Black Colleges and Universities, and Minority Institutions are particularly encouraged to respond to this NRA. Selection for funding will be based on (i) science and technical merit , (ii) relevance to NASA programs in space science, and (iii) cost.

TABLE 1 summarizes the program elements discussed in Appendix A, which provides technical and programmatic information specific to this NRA. Appendix B contains standard guidance for the preparation and evaluation of proposals. Appendix C provides model formats for summary information that must preface each proposal. This NRA , inlcuding all appendices ,may be accessed by downloading from the Internet or by sending a written request to the address below. The following summary information applies to this NRA:

- Program identifier: NRA 97-OSS-08
- NRA copies available: Electronically thru "Research Opportunities" on the OSS Homepage at at: <http://www.hq.nasa.gov/office/oss/>
  Hardcopy from:
  NASA Sun-Earth Connection NRA
  Jorge Scientific Corporation
  400 Virginia Avenue, SW, Suite 700
  Washington, DC 20024
  USA.

  Phone: 202-554-2775
  Facsimile: 202-554-3042 or 202-554-2970
  E-mail: dtripp@hq.nasa.gov
- Due date for Notice of Intent to propose: June 16, 1997
- Proposal deadline: August 18, 1997
- Required proposal copies: Signed original plus 10 copies

- Address for submission of both Notice of Intent and proposal:

  NASA Sun-Earth Connection NRA
  Jorge Scientific Corporation
  400 Virginia Avenue, SW, Suite 700
  Washington, DC 20024
  USA.

  Phone: 202-554-2775

  Proposals may not be submitted by facsimile or E-mail

  For Notice of Intent submission only:
  Facsimile: 202-554-3042 or 202-554-2970
  E-mail: dtripp@hq.nasa.gov

- Selecting official:

  Director
  Research Program Management Division
  Office of Space Science.

- Contact for additional information:

  Appropriate Discipline Scientists
  (see Appendix A)

Your interest and cooperation in this program are appreciated.

George L. Withbroe
Science Program Director
Sun-Earth Connection
Office of Space Science

Enclosures

APPENDIX A

SUN-EARTH CONNECTION

SUPPORTING RESEARCH AND TECHNOLOGY, SUBORBITAL, DATA RESTORATION, AND GUEST INVESTIGATOR PROGRAMS

1. PROGRAM DESCRIPTION

The Sun-Earth Connection theme of NASA's Office of Space Science (OSS) supports investigations of the Sun and planetary space environments, including the origin, evolution, and interactions of space plasmas and electromagnetic fields in the heliosphere and in connection with the galaxy. Understanding the origin and nature of solar activity and its effect on the space environment of the Earth is a particular focus. Current discipline foci are:

- Heliospheric/Cosmic Particle Physics: the origin and behavior of the solar wind, energetic particles, and magnetic fields in the heliosphere; their interaction with the interstellar medium; and theoretical studies of cosmic ray origin and propagation in the heliosphere and in the galaxy;

- Solar Physics: the Sun as a typical dwarf star, and as the dominant, time-varying source of energy, plasma, and energetic particles in the solar system, especially concerning its influence on the Earth;

- Magnetospheric Physics: the physics of magnetospheres, including their formation and fundamental interactions with plasmas, fields, and particles. The program emphasizes the Earth's magnetosphere, but also includes the magnetospheres of planets, comets, and other primordial bodies. and

- Ionospheric, Thermospheric, Mesospheric (ITM) Physics: the physics of the mesosphere, thermosphere, ionosphere, and aurorae of the Earth, including the coupling of these phenomena to the lower atmosphere and magnetosphere.

The emphasis in all of these disciplines is the study of processes that occur naturally in the space environment and/or the study of artificially induced perturbations that elucidate natural plasma processes. Details of the purview of these disciplines are given in respective subsections of Section 5.

The strategic vision for the Sun-Earth Connection is embodied in the "Sun-Earth Connection Roadmap - Strategic Planning for the Years 2000-2020." This document, which is currently in draft form, is accessible through the World Wide Web at <http://espsun.space.swri.edu/~roadmap/index.html>

It is NASA and U.S. Government policy to maximize the opportunities for Small Disadvantaged Businesses, Historically Black Colleges and Universities, and Minority Institutions. Investigators from such institutions are particularly encouraged to propose.

The programs covered by this NRA have now been comprehensively reviewed several times each since 1988, generally resulting in a distribution of one-, two-, and three-year research grants and contracts (hereafter collectively called awards). Since then, yearly NRA's have solicited proposals for those portions of the budget that are anticipated to be uncommitted as a result of the

expiration of previous awards and/or as a result of additional budget authority. This NRA is the only one to be issued for funding starting in Fiscal Year (FY) 1998 for basic supporting research and analysis in the programs listed in Table l and discussed in detail in Section 5 below.

2. RESEARCH OPPORTUNITY

2.1 PROGRAM TYPES

Proposals for several elements of the Sun-Earth Connection research program are solicited in this NRA. These include the Supporting Research and Technology (SR&T) and suborbital programs in the various disciplines as well as a SOlar and Heliospheric Observatory (SOHO) Guest Investigator program. Generic program descriptions follow immediately while discipline specific information can be found in Section 5.

(1) Supporting Research and Technology Program. The theme disciplines support between 20 and 80 individual research tasks each. These tasks employ a variety of research techniques, *e.g.*, theory, numerical simulation, and modeling; analysis and interpretation of existing space data; development of new instrument concepts; and laboratory measurements of relevant atomic and plasma parameters, all to the extent they have a clearly stated and specific application to contemporary problems of the natural phenomena and to the NASA Sun-Earth Connection program. The individual SR&T programs are described further in Section 5 below.

(2) Suborbital Programs. The objectives of the suborbital programs are: (i) to allow the study of naturally-occurring phenomena in space or near-space that can be obtained with relatively low cost instruments flown from unique locations and/or in conjunction with special events (*e.g.,* a solar eclipse or to gather ancillary data for a related orbiting spacecraft); and (ii) to proof-test new concepts in experimental techniques that may ultimately find application for orbital missions for Sun-Earth Connection program objectives. The suborbital program for Solar Physics is treated in Section 5.4 of this NRA and the combined suborbital program for Magnetospheric and ITM physics is treated in Section 5.5.

(3) Space Physics Theory Program (SPTP). This program allows relatively large "critical mass" groups of investigators to attack theoretical and modeling problems concerning the natural phenomena relating to the Sun-Earth Connection program that are beyond the scope of the nominally smaller SR&T tasks discussed above. This program was competed through NRA 95-OSS-11, and the current three year cycle of funding runs through FY 1998. This program is not open for competition through this NRA.

(4) Guest Investigator (GI) Programs. Guest Investigator Programs are intended to maximize the return from currently ongoing missions by providing support for research which heavily utilizes mission specific data from currently operating spacecraft. A SOHO Guest Investigator Program is described in Section 5 on this NRA . It is anticipated that an NRA describing a Guest Investigator Program for the International Solar Terrestrial Physics (ISTP) program will be issued in late 1997.

(5) Data Restoration Program. This program identifies space physics data holdings which are considered of significant value to the NASA funded scientific community and provides funding to restore, archive, and prepare these holdings for public access. The source of these data is not important and may be from NASA, non-NASA, and non-U.S. missions. This program does not apply to data where there is an existing mission contract to archive, restore, or make publicly available such data. Details of this program are provided in Section 5.6.

2.2 NEW AND RENEWAL PROPOSALS

Anyone wishing to be eligible for funding for a new task to be initiated in FY 1998 for the disciplines described here should respond to this NRA. All proposals received in response to this NRA will be reviewed on an equal basis without regard to whether a preceding task by the same investigator was previously funded by this or any other OSS program. Selections from among the proposals of highest scientific and technical merit will also take into account programmatic factors.

Investigators whose proposals were selected in past years for multiyear awards continuing through or beyond FY 1998 do not need to respond to this NRA. Continued funding for multiyear awards is, however, subject to the availability of funds and the demonstration of progress. Receipt of a satisfactory annual progress report is required before supplementary funding for year(s) following the first year of a multiyear award can be provided. Progress reports, which must include signed certifications (see Section 3.1) must be submitted the the appropriate Discipline Scientist three months prior to the award anniversary.

2.3 LIMITATIONS ON OBJECTIVES OF PROPOSALS

This NRA solicits proposals for research investigations that fall within the general scope of the science disciplines as defined in Section 1 but that are distinctly separate from investigations selected for currently approved space flight missions. Therefore, proposals whose intent or purpose is to extend or directly supplement an investigation selected for an approved space flight mission are not appropriate for this NRA.

Proposals for fabrication of complete flight instruments are not appropriate for this NRA except for the suborbital programs, details of which are provided in Section 5. However, the development of instrument concepts and/or critical subassemblies (e.g., detectors, filters, etc.) for long-duration space and/or suborbital flight through to the stage of laboratory ("brass board") verification may be proposed as an SR&T task provided the proposed activity is in the context of a clearly defined science investigation even though the investigation cannot be carried out without a flight opportunity. While such hardware proposals are strongly encouraged, funding for development of a laboratory instrument concept does not guarantee either a suborbital or orbital flight opportunity.

Proposals for the analysis of data from past missions are solicited. In order to be appropriate for SR&T funding, such proposals must have specific scientific objectives. Proposals that focus on just reprocessing, archiving, and/or routine reduction of flight data are appropriate only for the Data Restoration Program (see Section 5.6).

Some areas of study within the Sun-Earth Connection theme overlap with research objectives supported by other OSS disciplines. In particular, proposals dealing with the following disciplines are outside the purview of this NRA: the neutral components of planetary toruses, rings, and/or atmospheres of extra-terrestrial planets; comparison of the Sun to other stars; cosmic x-rays and gamma rays; and the chemistry and/or dynamics of the lower, neutral terrestrial atmosphere (i.e., below the mesosphere). If there are any questions, contact the appropriate discipline scientist.

2.4 EDUCATION AND PUBLIC OUTREACH

"Partners in Education: A Strategy for Integrating Education and Public Outreach Into NASA's Space Science Programs" (March 1995) describes the Office of Space Science's approach for making education at all levels and the enhancement of the public understanding of science integral parts of space science research activities. Education and public outreach are now expected to be a part of each flight program and research discipline. The follow-on implementation plan, titled "Implementing the Office of Space Science (OSS) Education/Public Outreach Strategy," produced by the Education/Public Outreach Task Force of the Space Science Advisory Committee (SScAC), was published October 15, 1996. It may be obtained from Dr. Jeffrey D. Rosendhal, Office of Space Science, Code S, NASA Headquarters, Washington,

DC 20546 0001; e-mail: <jeffrey.rosendhal@hq.nasa.gov> or by opening "Publications" on the OSS homepage at <http://www.hq.nasa.gov/office/oss/pubs.htm >.

In accordance with the policies in the OSS education strategy and the recommendations in the implementation plan, proposers are encouraged (but not required) to include education public/outreach activities in their proposals. Up to ten percent of a total grant award may be used for such activities. Scientific excellence of proposal investigations will continue to be the primary selection criterion. Proposals will not be selected solely or primarily on the strength of their education/outreach components, although the quality of a proposed education/outreach effort could be used as an additional factor in selecting among otherwise equal and scientifically excellent proposals. Educational components of those proposals being considered for selection on the basis of their scientific and technical merit will be evaluated by education professionals. Evaluation criteria for education components will include:

- The educational effectiveness and realism of program concept;
- Existence of effective partnerships with educational institutions and/or educators;
- Effective leveraging of existing resources and the prospects for the program to have a multiplier effect;
- Capability of proposers to carry out a proposed program;
- Consistency with national educational reform efforts;
- Realism of budget.

Attention is also called to the program entitled Initiative to Develop Education through Astronomy (IDEA) that is administered on behalf of OSS by the Space Telescope Science Institute. This program provides small grants (typically $6K but may range up to $20K) to enhance participation of space scientists in precollege or public outreach activities. A call for proposals for the IDEA program is issued annually. For more information, contact Dr. Anne Kinney, Project Scientist for Education, Space Telescope Science Institute, 3700 San Martin Drive, Baltimore, MD 21218.

3. PROPOSAL PREPARATION AND SUBMISSION

3.1. GENERAL PROVISIONS

Every proposal is required to have the following elements, which should be presented in the order given. Templates for the required standard forms can be found in Appendix C.

- Proposal Cover Sheet
- Budget Summary (see below)
- Proposal Summary
- Scientific/Technical Section
  - a clear description of a specific scientific problem;
  - a description of how the attack on this problem will be carried out;
  - a discussion of the relevance of the proposed research to NASA's current and/or future programs;
- Education/Outreach segment (optional)
- Curriculum Vitae (one page per investigator)
- Letters of commitment from Co-Investigators (see below)
- Summary of Current and Pending Support (see below)
- Budget Details (see below)
- Certification Forms (see below)

• A separate budget summary sheet should be provided for each year of the proposed investigation.

• Proposers must obtain and submit with the proposal signed letters of commitment from each co-investigator and collaborator. The letters should be brief and specific and may take the following one sentence form: "I am aware of the contents of the proposal (proposal title), by

(Principal Investigator's name) , and I am committed to fulfilling the role assigned to me in this proposal."

• A summary of Current and Pending Support is required for each Principal Investigator. The following information should be provided separately for categories A and B:

- Project title and sentence abstract
- Source of support
- Award amount by fiscal year

A. Currently supported research project(s) that will be active during FY 1998 (October 1, 1997, through September 30, 1998); and

B. Research projects(s) for which support is pending selection.

Any other funding agencies to which the proposal has been or will be contemporaneously submitted should be listed at the beginning of the Current and Pending Research section.

• The detailed instructions on the preparation of budgets that are presented in Appendix C (p. C-4) must be followed.

• All proposing institutions except for U.S,. Government facilities must submit single signed copies of (1) Certification Regarding Debarment, Suspension, and Other Responsibility Matters, and (2) Certification Regarding Drug-Free Workplace, with the original proposal. In addition, proposals requesting a cumulative total of $100,000 or more must also submit a (3) Certification Regarding Lobbying.

• Proposals for renewal of previously funded awards should clearly distinguish between the work which has already been completed and the new work being proposed.

• "Co-Principal Investigators" are not recognized; each proposal must have a single PI with overall scientific and financial responsibility for the task.

• NASA recognizes that the analysis of data from its older flight programs can still provide the basis for significant scientific progress and such data may be used for investigations submitted in response to this NRA. Investigators who wish to do so, however, must verify access to any data that is necessary for the proposed research.

• Even though NASA can provide awards for only one year at a time, proposers may request periods of performance of up to three years In the case of any multiyear proposal, the scope of the proposed research must justify such funding, and NASA reserves the right to request a revised proposal with restricted objectives appropriate for a reduced period of performance and/or reduced budget. If a proposal is accepted for a multiyear award, continued funding is subject to the availability of funds, and demonstration of satisfactory progress as evidenced by a brief annual report.

3.2 NOTICE OF INTENT TO PROPOSE

Submission of a Notice of Intent (NOI) to propose is requested in order to allow planning for a timely and efficient peer review process. Submission of a NOI does not commit the sender to submit a proposal, nor are Co-Investigator (Co-I) commitments binding. The NOI should include:

- reference to this NRA by its alpha-numeric identifier;
- the Program Element to which the proposal is to be directed;
- the names, institutional addresses, phone numbers, and E-mail addresses of the Principal Investigator and of anticipated Co-Investigators;
- the title of the expected investigation; and
- a brief description of the investigation to be proposed.

A NOI may be submitted by any one of the following means; do not send duplicates (e.g., facsimile followed by hard copy). An acknowledgment of receipt will be sent by mail.

- By postal or express mail to:

  1997 Sun-Earth Connection NRA
  Jorge Scientific Corporation
  400 Virginia Avenue, SW, Suite 700
  Washington, DC 20024 USA
  Phone: 202-554-2775

- By facsimile to: 202-554-3042 or 202-554-2970
- By electronic mail to: dtripp@hq.nasa.gov

3.3 SPECIFIC PROPOSAL PREPARATION INFORMATION

Proposals submitted in response to this NRA should be prepared following the provisions of Appendix B with the following exceptions.

- Replace paragraph (¶) b. of Section 7., entitled "Transmittal Letter or Prefatory Material," in its entirety as follows:

"**b. Transmittal Letter or Prefatory Material**

"In addition to any transmittal letter that the sponsoring institution may wish to send, the first pages of a proposal shall constitute summary sheets as follows:

- Cover Sheet (p. C-1 or C-2)
- Proposal Summary (p. C-3)
- Budget Summary (p. C-5)

"All new proposals from educational and private institutions must be accompanied by properly executed *Certifications* as follows (sample forms are enclosed as pages C-6, C-7, and C-8, respectively, of Appendix C). These certifications need be submitted only with the original signed proposal."

- Replace Section 9 of Appendix B, entitled "LENGTH," in its entirety as follows:

"Proposals should be as brief as possible, containing only substantive material essential for a complete understanding of the proposed project. The science and technical description portions of proposals are limited to 16 pages for all programs except the Suborbital programs for which the limit is 26 pages. An additional 5 pages is allowed for description of proposed Educational Outreach efforts. Neither the required prefatory pages (Appendix C), nor the appended Curriculum Vitae, letters of Co-I commitment, Summary of Current and Pending Support, Budget or Certifications count in these page limits. Each side of a sheet containing text or figures is considered a page. Multipage fold-outs count as the equivalent number of regular pages. Text may be single spaced but limited to 55 lines per page using a font having no more than ~14 characters per inch (10 point font).

"Restrictions. Do not send reprints or preprints of articles, nor audio or visual recordings. Proposals must use metric units. In order to facilitate recycling, proposals should be on white paper with a minimum of color or photographic inserts, printed double-sided if possible, and bound in a way that facilitates disassembly (e.g., staples, loose-leaf, or spiral plastic bindings)."

3.4 GUIDELINES FOR NON-U.S. PARTICIPATION

NASA welcomes proposals from outside the U.S. However, investigators working outside the U.S. are not eligible for funding from NASA. Proposals from non-U.S. entities should not include a cost plan. Proposals from outside the U.S. and U.S. proposals that include non-U.S. participation, must be endorsed by the respective government agency or funding/sponsoring institution in that country from which the non-U. S. participant is proposing. Such endorsement should indicate that the proposal merits careful consideration by NASA, and if the proposal is selected, sufficient funds will be made available to undertake the activity as proposed.

In addition to sending the required number of copies of the proposals to the designated address, one copy of the proposal, along with a Letter of Endorsement from the sponsoring non-U.S. agency, must be forwarded to:

Ms. Bettye Jones
(NRA 97-OSS-08)
International Science and Aeronautics Division
Code IS
NASA Headquarters
Washington, DC 20546-0001
USA

All proposals must be typewritten in English. All non-U.S. proposals will undergo the same evaluation and selection process as those originating in the U.S. All proposals must be received before the established closing date; those received after the closing date will be held for the next proposal cycle. Sponsoring non-U.S. agencies may, in exceptional situations, forward a proposal without endorsement to the above address if endorsement is not possible before the announced closing date. In such cases, however, NASA's International Science and Aeronautics Division should be advised when a decision on endorsement can be expected.

Successful and unsuccessful proposers will be contacted directly by the NASA Research Program Management Division. Copies of these letters will be sent to the sponsoring government agency. Should a non-U.S. proposal or a U.S. proposal with non-U.S. participation be selected, NASA's International Science and Aeronautics Division will arrange with the non-U.S. sponsoring agency for the proposed participation on a no-exchange-of-funds basis, in which NASA and the non-U.S. sponsoring agency will each bear the cost of discharging their respective responsibilities. Depending on the nature and extent of the proposed cooperation, these arrangements may entail:

1. a letter of notification by NASA;
2. an exchange of letters between NASA and the sponsoring governmental agency; or
3. a formal Agency-to-Agency Memorandum of Understanding (MOU).

4. PROPOSAL EVALUATION AND SELECTION

4 .1 EVALUATION CRITERIA

The criteria to be used for evaluation of proposals are given in Appendix B, Section 13, entitled "EVALUATION FACTORS,"

4.2 EVALUATION AND SELECTION PROCEDURES

Proposal evaluations will be accomplished as described in Appendix B, Section 14. A non-Government contractor is expected to aid NASA in organizing and documenting the proposal peer reviews, which will be done by mail-in and/or panel reviews. External reviewers will be asked to consider primarily only the science and technical merit of the proposals, whereas cost and relevance factors are the purview of NASA. All non-Government reviewers are required to submit nondisclosure statements prior to their participation in the evaluation process. Based on the peer and programmatic evaluations, final selections will be made by the Director of the Research Program Management Division, in consultation with the relevant science discipline staff of the Division as well as the Science Program Director for the Sun-Earth Connection theme.

5. SCIENCE DISCIPLINE SR&T PROGRAMS

5.1. Heliospheric Physics/Cosmic Particle Theory and Analysis

The program in heliospheric physics and cosmic particle theory and analysis supports research aimed at understanding:

1. How the Sun accelerates the solar wind and causes temporal and spatial variability in the solar wind;
2. The global dynamic character of the heliosphere, and the local particles and fields processes that change with distance and in three dimensions, in response to solar acitvity and rotation;
3. How the Sun interacts with our galaxy, the Milky Way, including the solar modulation of galactic cosmic rays; and
4. Acceleration and interaction of energetic particles in plasmas in the solar corona, heliosphere, and galaxy.

A. The Heliospheric Physics/Cosmic Particle Theory and Analysis Program. This program supports research projects involving data analysis, theory, and computer modeling directed towards the objectives of heliospheric science and energetic particle studies as described above. In addition, up to 10% of the available funding may be used to support preliminary studies of new instrumental techniques for heliospheric science, if warranted by proposal merit and relevance to the scientific objectives of the program.

Since 1988, major review of this program has been on a three-year cycle. As indicated in Table 1, the entire Heliospheric Physics//Cosmic Particle Theory and Analysis program will be reviewed this year. Total funding for this program has been about $1.7 M per year. It is expected that about 20 to 25 proposals will be selected for funding, for up to three years each.

B. General Information. Questions concerning the Heliospheric Physics/Cosmic Particle Theory program should be addressed to:

Dr. W. Vernon Jones
Research Program Management Division
Code SR
NASA Headquarters
Washington DC 20546-0001
Telephone : 202-358-0885
Fax: 202-358-3097
E-mail: vernon.jones@hq.nasa.gov

5.2 IONOSPHERIC, THERMOSPHERIC, AND MESOSPHERIC PHYSICS

The Ionospheric, Thermospheric, and Mesospheric (ITM) Physics program supports studies of the mesosphere and thermosphere regions of the upper atmosphere, the ionosphere, and the auroral processes of Earth. The goal of the ITM program is to understand the formation, structure, coupling, and dynamics of these systems. Magnetosphere-ionosphere coupling (which includes auroral phenomena) is treated within the ITM program. The primary emphasis in all cases is the study of processes that occur naturally in space, including the study of artificially induced perturbations that elucidate natural processes. Earth's ITM regions are an important part of the solar-terrestrial chain. The discipline thus supports studies of solar-terrestrial processes, including studies of coupling processes outward into the magnetosphere and inward to the upper atmosphere.

Proposals based on any *in situ* and/or space-based remote sensing data relevant to these study areas are appropriate. The use of ground-based data is appropriate, however, only when it can be shown that it is clearly and directly relevant to flight program goals. The program also supports laboratory studies that directly address problems in ITM physics.

A. Ionospheric, Thermospheric, Mesospheric Physics (ITM) Supporting Research and Technology (SR&T) Program. This program supports theory, simulation, and modeling, in-depth data analysis and synthesis, and laboratory studies pertinent to the study of the ionosphere, thermosphere, and mesosphere of the Earth. It also supports the exploration and demonstration of new instrument concepts pertinent to discipline goals, but does not support the development of space flight instruments *per se*. Total funding for the existing ITM program has been about $4.0 M per year. Of the 59 grants currently being funded, slightly less than one half will expire in FY 1997.

B. Suborbital Program in Magnetospheric, Ionospheric, Thermospheric Mesospheric (MITM) Physics. The MITM program supports research on magnetospheric, ionospheric, thermospheric, and mesospheric physics using a variety of methods for providing low cost access to space. These include standard and long-duration balloons, sounding rockets, Spartan and other Shuttle-based carriers, Space Station, and sounding rocket-class payloads flown as secondary payloads or on other flights of opportunity. See the separate program description in Section 5.6 for further details.

C. General Information. Questions concerning the ITM Physics Program should be addressed to:

Dr. Mary Mellott
Ionospheric, Thermospheric, and Mesospheric Physics
Research Program Management Division
Code SR
NASA Headquarters
Washington, DC 20546-0001
Telephone: 202-358-0893.
Fax: 202-358-3097
E-mail: mary.mellott@hq.nasa.gov

5.3 MAGNETOSPHERIC PHYSICS

The Magnetospheric Physics program supports studies of the structure and dynamics of magnetospheres and the interactions of solar system space plasmas with planetary magnetospheres and natural space bodies. The discipline focus is on naturally occurring space plasma phenomena, with attention given to both large-scale system structures and processes, and the underlying micro physics. The geospace portion of the solar-terrestrial chain, including the solar wind-magnetosphere interaction, is the principal focus of the program with an emphasis on the role of the magnetosphere in intercepting, storing, converting, and reacting to the impinging energy and momentum from the solar wind. Research on comparative magnetospheres, Moon-plasma interactions, and comet environments is also appropriate. Primary data are provided from space-based *in situ* and remote sensing measurements of plasmas, plasma waves, energetic particles, electric fields, and magnetic fields; global and large-scale images, e.g., auroras; and appropriate ground-based measurements complementary to and supportive of the space data.

A. Magnetospheric Physics Supporting Research and Technology Program. This program supports the analysis, interpretation, and synthesis of data; theoretical research; and the development of models and simulations with the purpose of identifying and understanding the physical processes important to magnetospheric structure and dynamics. The development and testing of new instrument concepts pertinent to discipline goals may also be supported, if the proposed activity is in the context of a clearly defined science investigation, but not the development of specific engineering, proto-flight, or flight instrumentation. Total funding in this program has been about $4.0 M per year. Of the approximately 70 grants currently being funded, about one third will expire in FY 1997.

B. Suborbital Program in Magnetospheric, Ionospheric, Thermosphere, and Mesosphere (MITM) Physics. The MITM program supports research on magnetospheric, ionospheric, thermospheric, and mesospheric physics using a variety of methods for providing low cost access to space. These include standard and long-duration balloons, sounding rockets, Spartan and other Shuttle-based carriers, and sounding rocket-class payloads flown as secondary payloads or on other flights of opportunity. See the separate program description in Section 5.6 for further details.

C. ISTP Guest Investigator (GI) Program. The spacecraft of the ISTP program (WIND, Polar, Geotail, and SOHO) are expected to be in extended phase operations in FY 1998 and into solar maximum. At present, the plan is to implement a GI program to pursue and achieve ISTP extended phase objectives. As soon as the program is approved, the requirements, resources, and scope of the GI program would be announced by NASA to the scientific community. It is currently anticipated that an NRA describing a Guest Investigator Program for the ISTP program will be issued in late 1997.

D. General Information. Questions concerning the Magnetospheric Physics programs should be addressed to:

Dr. Robert L. Carovillano
Magnetospheric Physics Discipline
Research Program Management Division
Code SR
NASA Headquarters
Washington, DC 20546-0001
Telephone: 202-358-0894
Fax: 202-358-3096
E-mail: robert.carovillano@hq.nasa.gov

5.4 SOLAR PHYSICS

The Solar Physics program has as its objective the comprehensive study of all solar regimes and source regions of the solar wind, defined as the solar interior, the quiet solar atmosphere, solar activity, and the solar corona. Proposals focused on extended analysis of data now in the public domain from previous solar space science missions are encouraged, as are proposals that would aid or abet the planning of possible future solar flight programs, which include:

- the Mechanisms of Solar Variability - Phase Zero (MSV-0) program that was started in FY 1994 (contact Discipline Scientist below for information);
- the Transition Region And Coronal Explorer (TRACE) to be launched in 1998 and operated under an open data policy, see for further information <http://www.space.lockheed.com/TRACE/welcome.html>;
- as a possible next step in the MSV program, a cooperative Japanese Solar-B mission to be launched about 2004 , see <http://wwwssl.msfc.nasa.gov/ssl/pad/solar/sol-b3.htm>.

A. Solar Physics Supporting Research and Technology Program. The Solar Physics SR&T program supports investigations involving analyses of existing data that are open in the public domain and are not currently supported by a specific SEC guest investigator program. Such acceptable SR&T investigations include the development of theoretical models and numerical simulation techniques pertinent to solar physics, and, in special cases, the development or coordination of solar ground-based observing capabilities that support NASA Solar Physics flight programs. This Solar Physics SR&T program also supports the exploration and demonstration of new instrument concepts pertinent to discipline goals, but it does not support the development of space flight instruments per se.

For purposes of the management of discipline balance, the NASA Solar Physics program is organized into a matrix of five techniques, viz.,

- Development of Instrument Concepts,
- Ground-based Observations,
- Theory,
- Data Analysis, and
- Ancillary Laboratory Research (*e.g.*, derivation of atomic constants or photometric calibrations),

and the four solar research regimes noted above. Investigations in all matrix categories are invited. Proposals that seek to develop laboratory concepts for new instruments for future suborbital or orbital flight opportunities are especially welcome. Although no priorities are imposed on these categories, an ideal program is envisaged as a balance among them, consistent with the quality of submitted proposals and their relevance to the current Solar Physics flight programs. To aid in the identification of peer reviewers, it is essential that the Cover Sheet (Appendix C, p. C.1) for Solar Physics proposals include a single discipline descriptor (*e.g.*, Theory/Corona; Ground-based Observations/Solar Interior; *etc*.) as the "TECHNIQUE/RESEARCH AREA" designation.

As part of a mission-oriented agency, the Sun-Earth Connection theme seeks to fund those efforts that directly impact NASA missions or interpretation of their data. Other investigations, even if of considerable merit, will not be given high priority for funding through this NRA if they are judged to be more appropriate for submission to other Federal agencies. Solar research topics likely to contribute to the charcterization and/or prediction of radiation exposure to astronauts are appropriate.

Note that solar physics will review, select, and directly fund only complete investigations proposed by a single PI. Funding of Co-I's from other institutions to an investigation must be accomplished by the PI institution of that investigation.

The Solar Physics SR&T program has had several comprehensive reviews since 1988, resulting in a distribution of one-, two-, and three-year grants. Therefore, only a portion of the program is currently available for competition each year. Total program funds in FY 1997 of $6.2 M supported approximately 79 grants, 25 of which are expiring.

B. Suborbital Program in Solar Physics. This program underwent comprehensive review in 1989, 1993, and 1996 for balloon and suborbital rocket investigations, resulting in the selection of a number of multiyear awards.

The suborbital solar rocket program is expected to be somewhat more focused in this coming three-year funding cycle, with emphasis on the support of the SOHO mission, the development of instrument concepts for the MSV-0 program that began in FY 1994, and efforts addressing the approaching solar activity cycle maximum. Proposals will also be considered, however, that address other science areas or technology development activities that relate to the general NASA Solar program using a variety of methods for providing low-cost access to space. These include standard and long-duration balloons, sounding rockets, Spartan and other Shuttle-based carriers, and sounding rocket-class payloads flown as secondary payloads or on other flights of opportunity.

If a previously funded rocket or balloon investigation group is reselected under this NRA, appropriate funding will continue for a period of up to three years, given adequate evidence of progress and availability of funds. Previously funded groups not reselected may receive phase-out funding for FY 1998, whereas new groups selected may receive only lower, phase-in funding. It is anticipated that about $2 M will be available for selection of three to five suborbital investigations beginning in FY 1998, as two current Spartan 201 programs begin phasing down.

C. SOlar and Heliospheric Observatory (SOHO) Guest Investigator Program. Proposals are invited to a SOHO Guest Investigator (GI) program requiring new SOHO observations, analysis of existing data, theoretical analysis in relation to SOHO observations, or ancillary ground-based observations. SOHO is a mission of international cooperation between ESA and NASA. An objective of the Guest Investigator program is to generate significant results quickly, utilizing the unique and vast capabilities of the SOHO mission.

Two types of Guest Investigator participation in the SOHO mission are foreseen.

- For the coronal experiments, GI's will be attached to an experiment team, and within that team have priority rights for the analysis of certain data sets or priority rights for a certain type of analysis. This mode of participation will apply to data from the following investigations: Coronal Diagnostic Spectrometer (CDS), Extreme-ultraviolet Imaging Telescope (EIT), White Light and Spectrometric Coronagraph (LASCO), Solar Ultraviolet Emitted Radiation (SUMER), Solar Wind Anisotropies (SWAN), and Ultraviolet Coronagraph Spectrometer (UVCS).

- The data for the particle and helioseismology experiments do not lend themselves to being split up into 'events', observing sequences, or time intervals, and, therefore, approved GI's will be included as members of the PI teams and share the rights and obligations of the team members. This mode of participation will apply to data from the following investigations: Charge, Element, and Isotope Analysis (CELIAS), Suprathermal and Energetic Particle analyser (COSTEP), Energetic Particle Analyser (ERNE), Global Oscillations at Low Frequencies (GOLF), Variability of Solar Irradiance (VIRGO), and the Michelson Doppler Imager/Solar Oscillations Imager (MDI/SOI).

The recommendations for selection of GI proposals will be made by the SOHO Guest Investigator Selection Committee (GISC) whose members are appointed by ESA and NASA. PI Teams will be asked for their comments on relevant proposals. Proposals will be evaluated according to their overall scientific merit, relevance to the SOHO mission, compatibility with declared SOHO PI team objectives, and feasibility. It is necessary but not sufficient for approval for a GI proposal that the proposed work add to the expertise existing within the SOHO experiment team rather than simply duplicating it. Awards will be made for one year, but it is anticipated that this SOHO Guest Investigator Program announcement will be repeated annually; about $400K is expected to be available for FY 1998. Non-U.S. GI's will have to obtain funding for their research from their national or other international institution.

Prospective Guest Investigators are strongly encouraged to contact the PI team to which they wish to be attached in an early stage of the preparation of the proposal. In particular, the following two issues need to be clarified before proposals are submitted:

1) The feasibility of the proposed observations--are they possible using SOHO instruments and can they be carried out with a reasonable amount of effort and time?

2) Potential conflicts with investigations by the SOHO PI teams, either through duplication of declared major PI team objectives, or interference with planned observations. Note that in this regard, SOHO PI teams may recommend to prospective GI's that they consider different SOHO teams if this seems more appropriate.

Interested parties may inquire by postal or electronic mail, or by phone, to the person in Section 5.4D below for additional written information describing the details of this opportunity, may consult the December 1995 issue of Solar Physics, or may see the detailed SOHO information found at the SOHO World Wide Web site <http://sohowww.nascom.nasa.gov/>.

Eligibility: U.S. PI's on the SOHO mission may not receive funding from or propose as a PI to this Guest Investigator program. SOHO Co-I's may propose to this GI program as PI's but must include in their proposals a description of their mission responsibilities that must not duplicate the research proposed in the GI proposal.

Guidelines for preparation and submission of proposals for this program are the same as those for the standard SR&T proposal with the exception that proposals for this program will be accepted up to 30 days after the due date for proposals to the main SR&T program.

D. General Information. Questions concerning the Solar Physics program should be addressed to:

Dr. William J. Wagner
Solar Physics Discipline Scientist
Research Program Management Division
Code SR
NASA Headquarters
Washington, DC 20546-0001
Telephone: 202-358-0911
Fax: 202-358-3097
E-mail: William.Wagner@hq.nasa.gov

5.5. SUBORBITAL PROGRAM IN MAGNETOSPHERIC, IONOSPHERIC, THERMOSPHERIC, AND MESOSPHERIC (MITM) PHYSICS

A. GENERAL SCOPE

The MITM program supports research on magnetospheric, ionospheric, thermospheric, and mesospheric physics using a variety of methods for providing low cost access to space. These include standard and long-duration balloons, sounding rockets, Spartan and other Shuttle-based carriers, Space Station, and sounding rocket-class payloads flown as secondary payloads or on other flights of opportunity. The emphasis is on the study of processes that occur naturally in space and/or the study of artificially induced perturbations that elucidate natural plasma processes. Owing to budgetary restrictions, it is extremely unlikely that plasma physics experiments made possible only through access to space can be supported. The base MITM program consists of a minimum number of balloon- and rocket-based investigations. Additional resources are used to provide further balloon and rocket payloads, Shuttle-based investigations, secondary payloads, and/or flights of opportunity investigations. Selection from among these additional investigations will be based on science return, cost-effectiveness, and overall programmatic balance. Proposals submitted in response to this NRA may submit budgets for up to three years that are expected to cover a complete suborbital investigation including payload construction, launch phase, and data analysis. An appropriate data analysis effort must be included as part of any flight program proposal.

It is necessary to minimize the operational costs to NASA for the preparation (payload integration and test) and field operations (especially the need for campaigns and/or launches from remote or non-U.S. sites) for its suborbital programs. Investigators are, therefore, strongly encouraged to propose investigations that minimize these operational factors, especially with regard to payload complexity and nontraditional launch sites. All those who intend to propose to the MITM program are strongly urged to discuss prospective investigations with operations personnel at Wallops Flight Facility in order to ensure that probable operational costs are properly anticipated. Questions concerning sounding rockets should be addressed to:

Mr. Bobby Flowers
Code 830
Wallops Flight Facility
Wallops Island, VA 23337
Telephone: 804-824-2202
E-mail: bobby.j.flowers@gsfc.nasa.gov

Questions concerning balloon investigations should be addressed to:

Mr. Harvey Needleman
Code 834
Wallops Flight Facility
Wallops Island, VA 23337
Telephone: 804-824-1453
E-mail: harvey.c.needleman@gsfc.nasa.gov

B. SPECIAL PROGRAMMATIC ISSUES

Support for extended data analysis. Proposals for support for data analysis extending beyond the nominal three-year proposal must be submitted separately to the appropriate SR&T program.

Reflight policy. The advantage of the quick, relatively inexpensive access to space provided by this suborbital program also carries an element of risk. NASA does not guarantee a reflight opportunity for an investigation that fails regardless of the cause of the failure. Although it can be cost effective to refly payloads that have been recovered after some types of flight failure,

decisions on reflight must take into account current MITM science priorities and budgets, as well as operational support capabilities. Investigators wishing to request reflight of unsuccessful experiments must submit new proposals.

Add-on instruments. MITM proposals are initially selected as comprehensive scientific investigations. The proposal to add an instrument to an ongoing program, whether provided by the selected investigation team or by someone outside of that team, must demonstrate that it is important to the completion of the scientific goals of the original proposal. Requests to expand payload scope beyond the original proposal will require further review of the project.

Sounding Rocket Launch Sites. The two standard U.S. launch sites for sounding rockets are White Sands Missile Range (WSMR), New Mexico, and Wallops Island, Virginia. Although launches from Poker Flat Rocket Range (PFRR) in Alaska require support from mobile launch crews, they do not require separate campaign proposals. However, prospective proposers should be aware that current plans call for the closing of PFRR in alternate years beginning with the winter season 1995-96.

Prospective investigators should also be aware that NASA sounding rocket flights from WSMR require the payment by NASA of significant fees. While the current operations budget contains sufficient funds to support a small number of flights from WSMR every year, it is difficult to accommodate investigations with extended launch windows at WSMR.

In addition to flights from WSMR, Wallops Island, and PFRR, the MITM program has historically been able to support up to one campaign per year consisting of a series of rockets flown from a common but nonstandard launch location. Campaigns are usually planned several years in advance. Those presently scheduled are for PFRR during the winter 1996-97; for Svalbard in the winter of 1997-98; and for Puerto Rico in the winter of 1998.

In proposing for a campaign, the following protocol must be followed:

- A Campaign Scientist should submit a "Campaign Summary" proposal describing the overall effort and listing prospective investigations. The following issues must also be addressed: the rationale for requesting the proposed launch site, the desired launch time, and/or other special launch conditions (moon-down, night time, etc.); any expected foreign involvement; required ground and/or airplane support ; any other information that defines the overall scope of the proposed campaign; and an overall cost budget.

- Each investigator who wishes to participate in a campaign must submit a separate investigation proposal, each of which will be independently reviewed. Clear cross-reference must be made to the Campaign proposal on the special MITM Cover Sheet, page C-2 (Appendix C).

Proposals from Multiple Institutions. Proposals to the MITM program often involve the development of payloads that require collaboration among several institutions. In such cases, the lead PI may propose a direct subcontracting arrangement between the PI institution and the Co-I institutions. To avoid the payment of multiple overhead fees, however, NASA prefers to provide separate awards to each institution involved in such multiinstitutional investigations, with a "Lead Co-I" from each Co-Investigator institution serving as the "Institutional PI" for the award to that institution. The following guidance applies to MITM proposals involving such separately funded contributions from multiple institutions.

- Only the primary proposal for the overall investigation, submitted by the lead PI, will be reviewed. This primary proposal must include the lead PI's work statement (in the page limit noted in Section 5.3) and budget, followed by short task statements and budgets (not counted in the page limit) from all other collaborating Co-I institutions. The MITM proposal cover sheet (see page C-2) of the leading proposal must show separately the dollar amounts requested by the leading institution and each Co-I institution, plus the yearly total requests for the total investigation.

- The appended task statement(s) from Co-I collaborating institution(s), not to exceed five pages, must describe that institution's contribution to the investigation, the roles of the Co-I'(s) at that institution (if more than one, a single Lead Co-I for that institution must be chosen), and a summary budget for the task following the format of page C-5 in Appendix C.

- Each Co-I institution must additionally submit a full formal, signed proposal incorporating the task statement noted above, all prefatory materials indicated in Appendix C, and a full institutional budget. Such Co-I proposals must be clearly cross-referenced on the Cover sheet to the lead PI proposal and must have the same title as the PI proposal.

C. FUNDING GUIDELINES

MITM program proposals selected under this NRA will be phased into the program as rapidly as resources permit. As a rule, new investigations are awarded definition-level funding in their first year, full funding for development in their second year, leading to flight early in their third year, which concludes with data analysis. Total funding in this program has been about $4 M per year; annual funding levels have averaged $200 K per investigation and $130 K per individual investigator. Of the 16 investigations currently being funded, 7 will end in FY 1997.

D. GENERAL INFORMATION

Questions concerning this program should be addressed to:

Dr. Mary Mellott
Suborbital MITM Physics Program
Research Program Management Division
Code SR
NASA Headquarters
Washington, DC 20546-0001
Telephone: 202-358-0893.
Fax: 202-358-3097
E-mail: mary.mellott@hq.nasa.gov

5.6. DATA RESTORATION PROGRAM

The Data Restoration Program identifies valuable data sets that are either in imminent danger of being permanently lost to the scientific community, or that are of such current value that special attention to them is warranted. This program supports the work necessary to prepare these data sets in a readily accessible and usable form for use by the entire science community.

Any data set that can be considered important to the NASA Space Science Enterprise is eligible, although the data set itself need not come from a NASA mission. Data from other agency missions and non-US missions will be considered.

Proposals to the Data Restoration Program will be reviewed separately from all other proposals in this NRA, and will be evaluated by scientists selected through the Space Science Data System.

There is approximately $400K available for new proposals this year, with $500K per year the target for following years, which is expected to support 10-15 proposals for one-year efforts; support for onger term effortswill also be considered based on proposal merit.

Questions concerning the Data Restoration Program should be addressed to:

Joseph H. Bredekamp
Data and Information Systems
Research Program Management Division
Code SR
NASA Headquarters
Washington, DC 20546-0001
Telephone: 202-358-2348
Fax: 202-358-3097
E-mail: Joseph.Bredekamp@hq.nasa.gov

6. MAILING LIST

Community members can arrange to receive automatic notification of upcoming NASA Research Announcements and/or Announcements of Opportunity by registering for the Office of Space Science (OSS) mailing list. Registration/update forms for the OSS mailing list can be obtained from the World Wide Web at <www.hq.nasa.gov/office/oss/research.htm >

or by contacting:

Ms. Nancy Jenkins
NASA Office of Space Science
Code SR
Washington DC 20546
Telephone: 202-358-0342
Fax: 202-358-3097
E-mail: nancy.jenkins@hq.nasa.gov

APPENDIX B

INSTRUCTIONS FOR RESPONDING TO NASA RESEARCH ANNOUNCEMENTS

June 1995

1. FOREWORD

a. These instructions apply to “NASA Research Announcements.” The "NASA Research Announcement (NRA)" permits competitive selection of research projects in accordance with statute while preserving the traditional concepts and understandings associated with NASA sponsorship of research.

b. These instructions are Appendix I to 1870.203 of the NASA Federal Acquisition Regulation Supplement.

2. POLICY

a. Proposals received in response to an NRA will be used only for evaluation purposes. NASA does not allow a proposal, the contents of which are not available without restriction from another source, or any unique ideas submitted in response to an NRA to be used as the basis of a solicitation or in negotiation with other organizations, nor is a pre-award synopsis published for individual proposals.

b. A solicited proposal that results in a NASA award becomes part of the record of that transaction and may be available to the public on specific request; however, information or material that NASA and the awardee mutually agree to be of a privileged nature will be held in confidence to the extent permitted by law, including the Freedom of Information Act.

3. PURPOSE

These instructions supplement documents identified as "NASA Research Announcements." The NRA's contain programmatic information and certain requirements which apply only to proposals prepared in response to that particular announcement. These instructions contain the general proposal preparation information which applies to responses to all NRA's.

4. RELATIONSHIP TO AWARD

a. A contract, grant, cooperative agreement, or other agreement may be used to accomplish an effort funded in response to an NRA. NASA will determine the appropriate instrument.

b. Grants are generally used to fund basic research in educational and nonprofit institutions, while research in other private sector organizations is accomplished under contract. Contracts resulting from NRA's are subject to the Federal Acquisition Regulation and the NASA FAR Supplement (NHB 5100.4). Any resultant grants or cooperative agreements will be awarded and administered in accordance with the NASA Grant and Cooperative Agreement Handbook (NHB 5800.1).

5. CONFORMANCE TO GUIDANCE

a. NASA does not have mandatory forms or formats for preparation of responses to NRA's; however, it is requested that proposals conform to the guidelines in these instructions. NASA may accept proposals without discussion; hence, proposals should initially be as complete as possible and submitted on the proposers' most favorable terms.

b. To be considered responsive, a submission must, at a minimum, present a specific project within the areas delineated by the NRA; contain sufficient technical and cost information to permit a meaningful evaluation; be signed by an official authorized to legally bind the submitting organization; not merely offer to perform standard services or to just provide computer facilities or services; and not significantly duplicate a more specific current or pending NASA solicitation.

6. NRA-SPECIFIC ITEMS

Several proposal submission items appear in the NRA itself. These include: the unique NRA identifier; when to submit proposals; where to send proposals; number of copies required; and sources for more information. Items included in these instructions may be supplemented by the NRA.

7. PROPOSAL CONTENTS

a. The following information is needed in all proposals in order to permit consideration in an objective manner. NRA's will generally specify topics for which additional information or greater detail is desirable. Each proposal copy shall contain all submitted material, including a copy of the transmittal letter if it contains substantive information.

b. Transmittal Letter or Prefatory Material.

(1) The legal name and address of the organization and specific division or campus identification if part of a larger organization;

(2) A brief, scientifically valid project title intelligible to a scientifically literate reader and suitable for use in the public press;

(3) Type of organization: e.g., profit, nonprofit, educational, small business, minority, women-owned, etc.;

(4) Name and telephone number of the principal investigator and business personnel who may be contacted during evaluation or negotiation;

(5) Identification of other organizations that are currently evaluating a proposal for the same efforts;

(6) Identification of the NRA, by number and title, to which the proposal is responding;

(7) Dollar amount requested , desired starting date, and duration of project;

(8) Date of submission; and

(9) Signature of a responsible official or authorized representative of the organization, or any other person authorized to legally bind the organization (unless the signature appears on the proposal itself).

c. Restriction on Use and Disclosure of Proposal Information. Information contained in proposals is used for evaluation purposes only. Offerors or quoters should, in order to maximize protection of trade secrets or other information that is confidential or privileged, place the following notice on the title page of the proposal and specify the information subject to the notice by inserting appropriate identification, such as page numbers, in the notice. In any event, information contained in proposals will be protected to the extent permitted by law, but NASA assumes no liability for use and disclosure of information not made subject to the notice.

NOTICE

> Restriction on Use and Disclosure of Proposal Information. The information (data) contained in [insert page numbers or other identification] of this proposal constitutes a trade secret and/or information that is commercial or financial and confidential or privileged. It is furnished to the Government in confidence with the understanding that it will not, without permission of the offeror, be used or disclosed other than for evaluation purposes; provided, however, that in the event a contract (or other agreement) is awarded on the basis of this proposal the Government shall have the right to use and disclose this information (data) to the extent provided in the contract (or other agreement). This restriction does not

limit the Government's right to use or disclose this information (data) if obtained from another source without restriction.

d. Abstract. Include a concise (200-300 word if not otherwise specified in the NRA) abstract describing the objective and the method of approach.

e. Project Description.

(1) The main body of the proposal shall be a detailed statement of the work to be undertaken and should include objectives and expected significance; relation to the present state of knowledge; and relation to previous work done on the project and to related work in progress elsewhere. The statement should outline the plan of work, including the broad design of experiments to be undertaken and a description of experimental methods and procedures. The project description should address the evaluation factors in these instructions and any specific factors in the NRA. Any substantial collaboration with individuals not referred to in the budget or use of consultants should be described. Subcontracting significant portions of a research project is discouraged.

(2) When it is expected that the effort will require more than one year for completion, the proposal should cover the complete project to the extent that it can be reasonably anticipated. Principal emphasis should, of course, be on the first year of work, and the description should distinguish clearly between the first year's work and work planned for subsequent years.

f. Management Approach. For large or complex efforts involving interactions among numerous individuals or other organizations, plans for distribution of responsibilities and arrangements for ensuring a coordinated effort should be described. Intensive working relations with NASA field centers that are not logical inclusions elsewhere in the proposal should be described.

g. Personnel. The principal investigator is responsible for supervision of the work and participates in the conduct of the research regardless of whether or not compensated under the award. A short biographical sketch of the principal investigator, a list of principal publications and any exceptional qualifications should be included. Omit social security number and other personal items which do not merit consideration in evaluation of the proposal. Give similar biographical information on other senior professional personnel who will be directly associated with the project. Give the names and titles of any other scientists and technical personnel associated substantially with the project in an advisory capacity. Universities should list the approximate number of students or other assistants, together with information as to their level of academic attainment. Any special industry- university cooperative arrangements should be described.

h. Facilities and Equipment.

(1) Describe available facilities and major items of equipment especially adapted or suited to the proposed project, and any additional major equipment that will be required. Identify any Government-owned facilities, industrial plant equipment, or special tooling that are proposed for use.

(2) Before requesting a major item of capital equipment, the proposer should determine if sharing or loan of equipment already within the organization is a feasible alternative. Where such arrangements cannot be made, the proposal should so state. The need for items that typically can be used for research and non-research purposes should be explained.

i. Proposed Costs.

(1) Proposals should contain cost and technical parts in one volume: do not use separate "confidential" salary pages. As applicable, include separate cost estimates for salaries and wages; fringe benefits; equipment; expendable materials and supplies; services; domestic and foreign travel; ADP expenses; publication or page charges;

consultants; subcontracts; other miscellaneous identifiable direct costs; and indirect costs. List salaries and wages in appropriate organizational categories (e.g., principal investigator, other scientific and engineering professionals, graduate students, research assistants, and technicians and other non-professional personnel). Estimate all manpower data in terms of man-months or fractions of full-time.

(2) Explanatory notes should accompany the cost proposal to provide identification and estimated cost of major capital equipment items to be acquired; purpose and estimated number and lengths of trips planned; basis for indirect cost computation (including date of most recent negotiation and cognizant agency); and clarification of other items in the cost proposal that are not self- evident. List estimated expenses as yearly requirements by major work phases. (Standard Form 1411 may be used).

(3) Allowable costs are governed by FAR Part 31 and the NASA FAR Supplement Part 18-31 (and OMB Circulars A-21 for educational institutions and A-122 for nonprofit organizations).

j. Security. Proposals should not contain security classified material. If the research requires access to or may generate security classified information, the submitter will be required to comply with Government security regulations.

k. Current Support. For other current projects being conducted by the principal investigator, provide title of project, sponsoring agency, and ending date.

l. Special Matters.

(1) Include any required statements of environmental impact of the research, human subject or animal care provisions, conflict of interest, or on such other topics as may be required by the nature of the effort and current statutes, executive orders, or other current Government-wide guidelines.

(2) Proposers should include a brief description of the organization, its facilities, and previous work experience in the field of the proposal. Identify the cognizant Government audit agency, inspection agency, and administrative contracting officer, when applicable.

8. RENEWAL PROPOSALS

a. Renewal proposals for existing awards will be considered in the same manner as proposals for new endeavors. A renewal proposal should not repeat all of the information that was in the original proposal. The renewal proposal should refer to its predecessor, update the parts that are no longer current, and indicate what elements of the research are expected to be covered during the period for which support is desired. A description of any significant findings since the most recent progress report should be included. The renewal proposal should treat, in reasonable detail, the plans for the next period, contain a cost estimate, and otherwise adhere to these instructions.

b. NASA may renew an effort either through amendment of an existing contract or by a new award.

9. LENGTH

Unless otherwise specified in the NRA, effort should be made to keep proposals as brief as possible, concentrating on substantive material. Few proposals need exceed 15-20 pages. Necessary detailed information, such as reprints, should be included as attachments. A complete set of attachments is necessary for each copy of the proposal. As proposals are not returned, avoid use of "one-of-a-kind" attachments: their availability may be mentioned in the proposal.

10. JOINT PROPOSALS

a. Where multiple organizations are involved, the proposal may be submitted by only one of them. It should clearly describe the role to be played by the other organizations and indicate the legal and managerial arrangements contemplated. In other instances, simultaneous submission

of related proposals from each organization might be appropriate, in which case parallel awards would be made.

b. Where a project of a cooperative nature with NASA is contemplated, describe the contributions expected from any participating NASA investigator and agency facilities or equipment which may be required. The proposal must be confined only to that which the proposing organization can commit itself. "Joint" proposals which specify the internal arrangements NASA will actually make are not acceptable as a means of establishing an agency commitment.

11. LATE PROPOSALS

A proposal or modification received after the date or dates specified in an NRA may be considered if the selecting official deems it to offer NASA a significant technical advantage or cost reduction.

12. WITHDRAWAL

Proposals may be withdrawn by the proposer at any time. Offerors are requested to notify NASA if the proposal is funded by another organization or of other changed circumstances which dictate termination of evaluation.

13. EVALUATION FACTORS

a. Unless otherwise specified in the NRA, the principal elements (of approximately equal weight) considered in evaluating a proposal are its relevance to NASA's objectives, intrinsic merit, and cost.

b. Evaluation of a proposal's relevance to NASA's objectives includes the consideration of the potential contribution of the effort to NASA's mission.

c. Evaluation of its intrinsic merit includes the consideration of the following factors, none of which is more important than any other:

(1) Overall scientific or technical merit of the proposal or unique and innovative methods, approaches, or concepts demonstrated by the proposal.

(2) Offeror's capabilities, related experience, facilities, techniques, or unique combinations of these which are integral factors for achieving the proposal objectives.

(3) The qualifications, capabilities, and experience of the proposed principal investigator, team leader, or key personnel critical in achieving the proposal objectives.

(4) Overall standing among similar proposals and/or evaluation against the state-of-the-art.

d. Evaluation of the cost of a proposed effort includes the realism and reasonableness of the proposed cost and the relationship of the proposed cost and available funds.

14. EVALUATION TECHNIQUES

Selection decisions will be made following peer and/or scientific review of the proposals. Several evaluation techniques are regularly used within NASA. In all cases proposals are subject to scientific review by discipline specialists in the area of the proposal. Some proposals are reviewed entirely in-house, others are evaluated by a combination of in-house and selected external reviewers, while yet others are subject to the full external peer review technique (with due regard for conflict-of- interest and protection of proposal information), such as by mail or through assembled panels. The final decisions are made by a NASA selecting official. A proposal which is scientifically and programmatically meritorious, but not selected for award during its initial review, may be included in subsequent reviews unless the proposer requests otherwise.

15. SELECTION FOR AWARD

a. When a proposal is not selected for award, and the proposer has indicated that the proposal is not to be held over for subsequent reviews, the proposer will be notified. NASA will explain generally why the proposal was not selected. Proposers desiring additional information may contact the selecting official who will arrange a debriefing.

b. When a proposal is selected for award, negotiation and award will be handled by the procurement office in the funding installation. The proposal is used as the basis for negotiation. The contracting officer may request certain business data and may forward a model contract and other information which will be of use during the contract negotiation.

16. CANCELLATION OF NRA

NASA reserves the right to make no awards under this NRA and to cancel this NRA. NASA assumes no liability for canceling the NRA or for anyone's failure to receive actual notice of cancellation. Cancellation may be followed by issuance and synopsis of a revised NRA, since amendment of an NRA is normally not permitted.

APPENDIX C

PROPOSAL PREFATORY MATERIALS

NRA 97-OSS-08
SUN-EARTH CONNECTION
SUPPORTING RESEARCH AND TECHNOLOGY, SUBORBITAL,DATA RESTORATION AND GUEST INVESTIGATOR PROGRAMS

PROPOSAL COVER SHEET

NRA 97-OSS-08
SUN-EARTH CONNECTION
SUPPORTING RESEARCH AND TECHNOLOGY, SOLAR SUBORBITAL, DATA RESTORATION, AND GUEST INVESTIGATOR PROGRAMS

PROGRAM ELEMENT: (check one)

- ¤ Data Restoration Program
- ¤ Heliospheric/Cosmic Ray Physics
- ¤ Ionospheric, Thermospheric, and Mesospheric Physics
- ¤ Magnetospheric Physics
- ¤ SOHO Guest Investigator Program
- ¤ Solar Physics

  Technique/Research Area_____

TITLE OF INVESTIGATION:

PRINCIPAL INVESTIGATOR: Name/Title
Institutional address
Telephone and E-mail address
Signature

CO-INVESTIGATOR(S): Name(s)
Institutional Address(es)

INSTITUTIONAL AUTHORIZATION:
Name/Title
Institutional address including telephone
Authorizing Signature/Date

BUDGET SUMMARY:	1st Year	2nd Year	3rd Year	Total
• RESEARCH TASK ($K):	_____	_____	_____	_____

PROPOSAL COVER SHEET

NRA 97-OSS-08
SUBORBITAL PROGRAM IN
MAGNETOSPHERIC, IONOSPHERIC, THERMOSPHERIC, AND MESOSPHERIC (MITM) PHYSICS

¤ Principal Investigator Proposal

¤ Co-Investigator Proposal

If Co-I proposal, identify lead proposal:_____

_____

Campaign component? Yes/No

If Yes, identify campaign:_____

Requested Vehicle(s) (number and type):_____

Requested Launch Site:_____

Expected Launch Date:_____

TITLE OF INVESTIGATION:

PRINCIPAL INVESTIGATOR: Name/Title
Institutional address
Telephone and E-mail address
Signature

CO-INVESTIGATOR(S): Name(s)
Institutional Address(es)
(may be listed on following page)

INSTITUTIONAL AUTHORIZATION:
Name/Title
Institutional address including telephone
Authorizing Signature/Date

BUDGET SUMMARY:	1st Year	2nd Year	3rd Year	Total
• RESEARCH TASK ($K):				
PI	_____	_____	_____	_____
Co-I	_____	_____	_____	_____
.				
.	_____	_____	_____	_____
Total	_____	_____	_____	_____

PROPOSAL SUMMARY

PROGRAM ELEMENT:

TITLE OF INVESTIGATION:

PRINCIPAL INVESTIGATOR / INSTITUTION:

SUMMARY OF PROPOSED INVESTIGATION:

Special Instructions:

- Proposal Summary may be single spaced and should not exceed the remainder of this page

- Proposal Summary should serve as the abstract of the proposal, which need not be repeated as part of the proposal.

- Proposal summary should address the following points:

  (a) Overall objectives and strategy of the proposed work.
  (c) A brief description of what will be done and plan of activities.
  (d) Statement of relevance of proposed research to NASA's Space Science programs.

INSTRUCTIONS FOR BUDGET PREPARATION

General Instructions for PROPOSAL BUDGET SUMMARY

1. Provide a separate Budget Summary sheet for each year of the proposal research.

2. Grantee estimated costs should be entered in Column A. Columns B and C are for NASA use only. Column C represents the approved grant budget.

3. Provide in attachments to the proposal the detailed computations of estimates in each category, along with any narrative explanation required to fully explain proposed costs.

Material to be included in budget attachment:

1. Direct Labor (salaries, wages and fringe benefits). Enclosures should list number and titles of personnel, amount of time devoted to the grant, and rates of pay.

2. Other Direct Costs.

   a. Subcontracts - Enclosures should describe the work to be subcontracted, estimated amount, recipient (if known), and the reason for subcontracting this effort.
   b. Consultants - Identify consultants to be used, why they are necessary, time to be spent on the project, and rates of pay.
   c. Equipment - List separately and explain the need for items of equipment exceeding $1,000. Describe the basis for the estimated cost.
   d. Supplies - Provide general categories of needed supplies, the method of acquisition, estimated cost, and the basis for the estimate.
   e. Travel - List the proposed trips individually, describe their purpose in relation to the grant, provide dates and destinations where known, and explain how the cost for each was derived.
   f. Other - Enter the total of any other direct costs not covered by 2.a through 2.e. Enclose an itemized list explaining the need for each item and the basis for the estimate.

3. Indirect Costs. Identify indirect cost rate(s) and base(s) as approved by the cognizant Federal agency, including the effective period of the rate. If unapproved rates are used, explain why and include a computational basis for the indirect expense pool and corresponding allocation base for each rate.

4. Other Applicable Costs. Enter the total of any other applicable costs not covered by instructions 1 through 3. Enclose an itemized list explaining the need for each item and the basis for the estimate.

5. Subtotal -- Estimated Costs. Enter the sum of items 1, 2.a through 2.f, 3, and 4.

6. Less Proposed Cost Sharing (if any). Enter the amount proposed, if any. If cost sharing is based on specific cost items, identify each item and amount in enclosures.

7. Carryover Funds (if any). Enter the dollar amount of any funds that are expected to be available for carryover from the prior budget period.

8. Total Estimated Costs. Enter the total after subtracting items 6 and 7 from item 5.

PROPOSAL BUDGET SUMMARY

FROM: (starting date)_____to _____(ending date)

TITLE OF INVESTIGATION:

PRINCIPAL INVESTIGATOR / INSTITUTION:

			NASA USE ONLY	
	A		**B**	**C**
1. Direct Labor (salaries, wages, and fringe benefits)	_____		_____	_____
2. Other Direct Costs: a. Subcontracts	_____		_____	_____
b. Consultants	_____		_____	_____
c. Equipment	_____		_____	_____
d. Supplies	_____		_____	_____
e. Travel	_____		_____	_____
f. Other	_____		_____	_____
3. Indirect Costs	_____		_____	_____
4. Other Applicable Costs	_____		_____	_____
5. Subtotal--Estimated Costs	_____		_____	_____
6. Less Proposed Cost Sharing	_____		_____	_____
7. Carryover Funds (if any) a. Anticipated amount	_____		_____	_____
b. Amount used to reduce budget	_____		_____	_____
8. Total Estimated Costs	_____		_____	XXXXXXXX
APPROVED BUDGET	XXXXXX		XXXXXX	_____

CERTIFICATION REGARDING
DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS
PRIMARY COVERED TRANSACTIONS

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 34 CFR Part 85, Section 85.510, Participant's responsibilities. The regulations were published as Part VII of the May 26, 1988 Federal Register (pages 19160–19211). Copies of the regulations may be obtained by contacting the U. S. Department of Education, Grants and Contracts Service, 400 Maryland Avenue, S. W. (Room 3633 GSA Regional Office Building No. 3), Washington, D. C. 20202-4725, telephone (202) 732-2505.

(1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

(2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Institution Principal Investigator

Name and Title of Authorized Representative

Signature Date

CERTIFICATION REGARDING DRUG-FREE WORKPLACE REQUIREMENTS
GRANTEES OTHER THAN INDIVIDUALS

This certification is required by the regulations implementing the Drug-Free Workplace Act of 1988, 34 CFR Part 85, Subpart F. The regulations, published in the January 31, 1989 Federal Register, require certification by grantees, prior to award, that they will maintain a drug-free workplace. The certification set out below is a material representation of fact upon which reliance will be placed when the agency determines to award the grant. False certification or violation of the certification shall be grounds for suspension of payments, suspension or termination of grants, or government wide suspension or debarment (see 34 CFR Part 85, Sections 85.615 and 85.620).

The grantee certifies that it will provide a drug-free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b) Establishing a drug-free awareness program to inform employees about—
   (1) The dangers of drug abuse in the workplace;
   (2) The grantee's policy of maintaining a drug-free workplace;
   (3) Any available drug counseling, rehabilitation, and employee assistance programs; and
   (4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

(d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will—
   (1) Abide by the terms of the statement; and
   (2) Notify the employer of any criminal drug statute conviction for a violation occurring in the workplace no later than five days after such conviction;

(e) Notifying the agency within ten days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction;

(f) Taking one of the following actions, within 30 days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted—
   (1) Taking appropriate personnel action against such an employee, up to and including termination; or
   (2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;

(g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), (c), (d), (e) and (f).

Institution Principal Investigator

Name and Title of Authorized Representative

Signature Date

CERTIFICATION REGARDING LOBBYING

As required by S1352 Title 31 of the U.S. Code for persons entering into a grant or cooperative agreement over $100,000, the applicant certifies that:

(a) No Federal appropriated funds have been paid or will be paid by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, in connection with making of any Federal grant, the entering into of any cooperative, and the extension, continuation, renewal, amendment, or modification of any Federal grant or cooperative agreement;

(b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting an officer or employee of any agency, Member of Congress, an or an employee of a Member of Congress in connection with this Federal grant or cooperative agreement, the undersigned shall complete Standard Form -LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(c) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subgrants, contracts under grants and cooperative agreements, and subcontracts), and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by S1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less that $10,000 and not more than $100,000 for each such failure.

_____

Organization Name AO or NRA Number and Name

_____

Printed Name and Title of Authorized Representative

_____

Signature Date

Printed Principal Investigator Name Proposal Title